

ABSTRACT OF THE DISCLOSURE

An alignment system that uses a single optical sensor to enable the end of an optical fiber to be aligned with the input of an optical waveguide of an optical device. In accordance with the present invention, it has been determined that the output of a
5 single optical sensor can be processed and converted into digital signals, which are then further processed in accordance with an alignment algorithm to generate feedback signals that enable precise alignment to be achieved. The alignment system includes the single optical sensor, a lens and processing logic. The processing logic includes an electrical processing circuit that generates an amplified, filtered signal
10 with low noise and a wide dynamic range, an analog-to-digital converter (ADC) that converts the output of the processing circuitry into digital signals and a computer, which processes the digital signals in accordance with the alignment algorithm being executed by the computer to generate the feedback signals that enable the end of the optical fiber to be aligned with the input of the optical waveguide. The feedback
15 signals are sent to a motion control system that is configured to adjust the spatial positioning of the end of the optical fiber in accordance with the feedback signals.